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10/089,008

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Cheol-Hyun Han

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06/16/2004

DORSEY & WHITNEY LLP  
INTELLECTUAL PROPERTY DEPARTMENT  
4 EMBARCADERO CENTER  
SUITE 3400  
SAN FRANCISCO, CA 94111

EXAMINER

ALANKO, ANITA KAREN

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

10/089,008

HAN ET AL.

Examiner

Art Unit

Anita K Alanko

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4/8/04 amdt.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-21 is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☒ Claim(s) 2 and 6-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

*Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller et al (US 4,783,821 A) in view of Jerman (US 5,209,118 A), Ladabaum et al (US 5,870,351 A) and Loeppert (US 5,490,220 A).*

Muller discloses a diaphragm transducer and a method of making a diaphragm transducer comprising:

providing a silicon substrate 27 and depositing layers of a bottom conductive layer polysilicon 25, silicon oxide 23, zinc oxide 21, silicon oxide 29 and a top conductive layer of aluminum 24;

depositing a layer of silicon nitride as a diaphragm 22;

patterning contact holes to the bottom and top conductive layers (col.8, line 38, "step 15");

releasing the diaphragm by removing portions of the silicon substrate by backside etching (col.6, lines 56+, "step 5").

Muller does not disclose to deposit backside silicon nitride on the substrate. Rather, Muller discloses to use a photoresist as an etch mask. However, it is conventional in the art to use silicon nitride as an etch mask for etching silicon. Therefore, it would have been obvious to one with ordinary skill in the art to use silicon nitride for the backside etch mask because its use

is conventional in the art for etching silicon.

Muller does not disclose to use an insulating layer of parylene. Ladabaum et al teaches that silicon oxide and parylene are alternative insulating materials (see claims 3 and 4). It would have been obvious to one with ordinary skill in the art to use parylene in place of silicon oxide in the method of Muller because Ladabaum teaches that they are known alternative insulating materials.

Muller does not disclose to use parylene as the diaphragm material. Rather, Muller discloses to use silicon nitride as the diaphragm. Jerman teaches that in transducer applications, that it is known that diaphragms can be formed of silicon nitride or parylene (col.7, lines 1-5). The choice depends on the application and device characteristics sought. Therefore, it would have been obvious to one with ordinary skill in the art to use parylene as the diaphragm in the method of Muller because Jerman teaches that they are known alternative diaphragm materials.

Muller discloses to use polysilicon as the bottom conductive layer, not aluminum. Loeppert teaches that polysilicon and aluminum are known alternative conductive materials (col.3, lines 41-45). It would have been obvious to use aluminum as the bottom conductive layer in the method of Muller because Loeppert teaches that aluminum and polysilicon are known alternative conductive materials.

#### ***Allowable Subject Matter***

Claims 2, 6-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 12-21 are allowed.

***Response to Arguments***

Applicant's arguments filed 3/8/04 have been fully considered but they are not persuasive. The method claims have open "comprising" language and are not limited to a particular order of steps. As to claim 12-13, applicant's arguments are persuasive.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

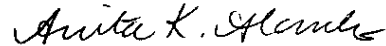
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon, Tues & Fri: 8:30 am-5 pm; Wed&Thurs: 10 am-2 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Anita K Alanko  
Primary Examiner  
Art Unit 1765